



Power Supply Modules

Cat. No. 1771-P3, -P4, -P5 and -P5E

Installation Instructions

To The Installer

This document provides information on:

- pre-installation information
- connecting input power
- setting the power loss time delay (1771-P5E only)
- installing the power supplies
- paralleling power supplies
- indicator lights
- troubleshooting
- specifications

Pre-installation Considerations

The 1771-P3 power supply is a single-slot module; and the 1771-P4, -P5 and -P5E power supplies are 2-slot modules. These power supply modules can be used in both series A and B 1771 I/O chassis, subject to the conditions listed below.

- Series A 1771 I/O chassis – You are restricted to the following:

Processor	I/O Chassis	1st Power Supply	2nd Power Supply
Without an integral power supply	1771-A4	1771-P3 – 1st slot group 0 1771-P4, -P5, -P5E – slots 0 and 1	1771-P3 – 1st slot of group 5 1771-P4, -P5, -P5E – slots 8 and 9
With an integral power supply	1771-A4	Not Applicable	1771-P3 – 1st slot of group 4 1771-P4 – group 4 1771-P5, -P5E – not applicable
	1771-A2		1771-P3 – 1st slot of group 3 1771-P4 – group 3 1771-P5, -P5E – not applicable

- Series B (or later) 1771 I/O chassis – You may place this module in any slot of a series B (or later) I/O chassis, except the left-most slot which is reserved for the processor.

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Important: Do not parallel a 1771-P5 or -P5E power supply and an ac powered processor. Use the same voltage source to power two paralleled units.

- 1772-LSP, -LWP and -LXP processors contain an integral ac input power supply. Therefore, you can add only one additional power supply module.
- 1772-LS, -LW and -LX processors do not contain an integral power supply. You **can** install up to two additional power supply modules. Refer to Table A.

Table A
Power Supply/Processor Usage

Power Supply Cat. No.	1771-AL 1771-AR ² 1771-ASB	1771-AS	1772-LN1, -LN2, -LN3, -LV	1772-LS 1772-LW 1772-LX	1772-LSP ¹ 1772-LWP ¹ 1772-LXP ¹
1771-P3					
1771-P4					
1771-P5, -P5E					

Where:

	The two components are compatible for use together in a series A or B I/O chassis
	The two components are compatible for use together only in a series B I/O chassis
	Not compatible

¹ Power supply and backup battery included

² Switch 7 of I/O chassis must be turned on. Refer to Remote I/O Adapter Module publication 1771-2.17.

Refer to Table B. You can parallel the power supplies with processors and each other.

Table B
Power Supply Module Current Capabilities

Power Supply Paralleled with	Total Available Backplane Current for I/O Modules			
	1771-P3	1771-P4	1771-P5	1771-P5E
1771-P3	6A	11A		
1771-P4	11A	16A		
1771-P5, -P5E ¹			16A	16A
1772-LSP	5A	10A		
1772-LXP	7A	12A		
1772-LWP	7A	12A		

¹ The 1771-P5 or -P5E power supply is designed to operate in parallel only with another 1771-P5 power supply. The total current capability would be 16A.

To parallel power supply modules, use the power supply paralleling cable, cat. no. 1771-CT.



ATTENTION: Power supply modules have a controlled “soft-start” feature to enhance power supply reliability. During power-up or power-down periods, outputs of certain discrete modules may momentarily change operating state. These modules are:

- Isolated AC (120V) Output Module, cat. no. 1771-OD series A or B
- Isolated AC (220V) Output Module, cat. no. 1771-OR series A
- Contact Output Module cat. no. 1771-OY series A or B
- Contact Output Module cat. no. 1771-OZ series A or B
- DC (5V) Multiplexer Input Module cat no. 1771-IS

Later series of these modules do not change state during power-up or power-down.

Failure to observe this warning may damage equipment and/or injure personnel.

Connecting Input Power

The 1771-P3, -P4, -P5 and -P5E power supply modules require power from an external power source. Refer to Table C for input voltage requirements and output current capability for the individual power supply modules.

Table C
Power Supply Module Input Voltage Requirements

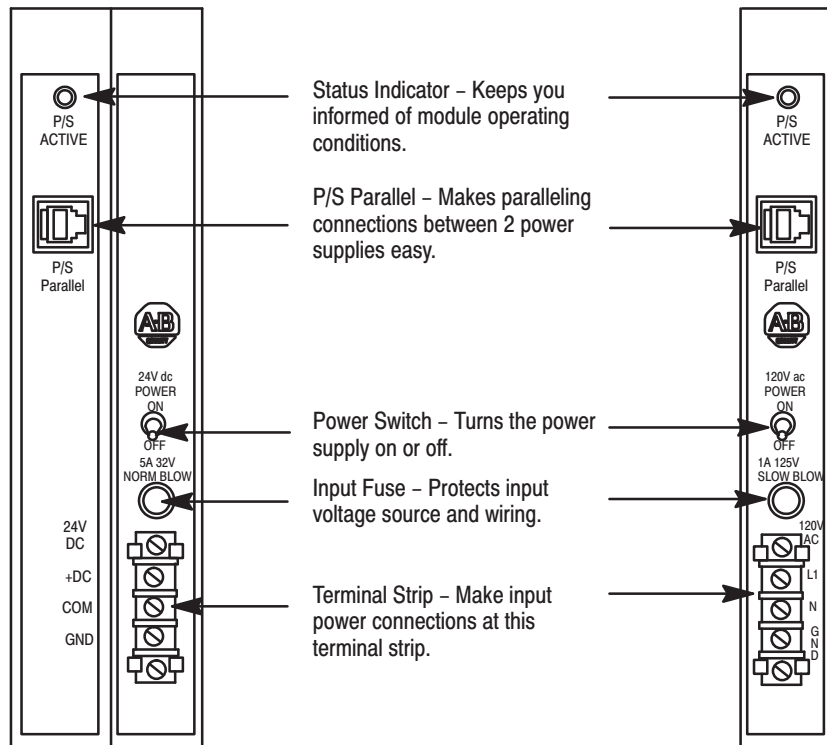
Power Supply Module	Input Voltage Requirements	Output Current
1771-P3	120V ac (97–132V ac)	3A @ 5V
1771-P4	120V ac (97–132V ac)	up to 8A @ 5V
1771-P5	24V dc (20.5–30V dc)	up to 8A @ 5V
1771-P5E	24V dc (20.5–30V dc)	up to 8A @ 5V

Refer to _____ and _____ for input power connections.

Figure 1
Features of the Power Supply Modules

Cat. No. 1771-P5 and 1771-P5E

Cat. No. 1771-P3



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Installing the Power Supply

To install the power supply module in the I/O chassis, proceed as follows:



ATTENTION: Turn the power supply OFF before inserting into the I/O chassis. Turn off power to the I/O chassis before inserting this module into the chassis.

- Failure to remove power from the backplane could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

1. Turn off power to the I/O chassis
2. Turn the power supply module power switch OFF.
3. Place the printed circuit board on the rear of the module into the plastic tracks on the top and bottom of the I/O chassis which guide the module into the chassis.

Installation Instructions

Power Supply Modules

Cat. No. 1771-P3, -P4, -P5 and -P5E

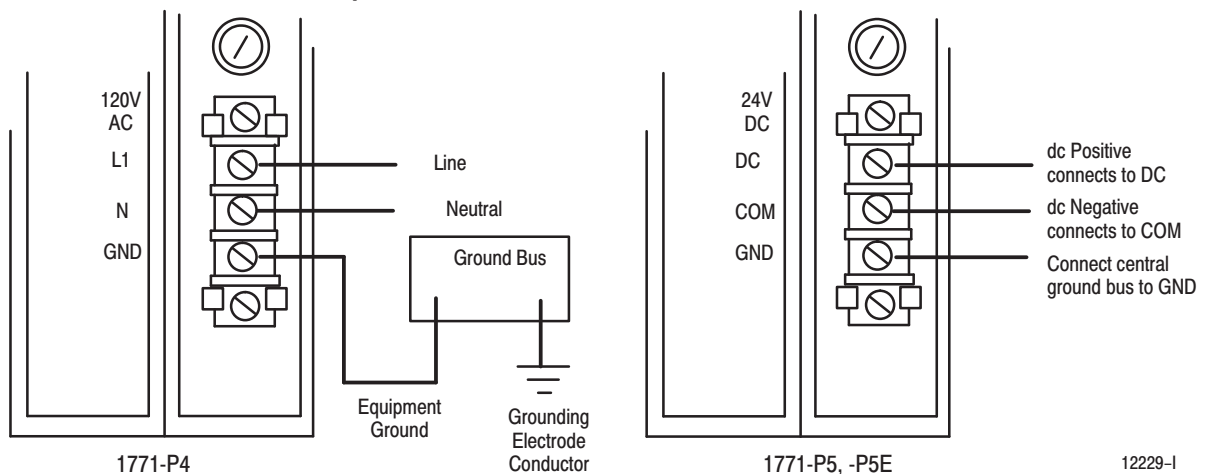
4. Do not force the module into the backplane connectors. Apply firm, even pressure on the module to seat it properly.
5. Snap the chassis latch over the top of the module to secure its position.
6. Make power connections as described in “Making Input Power Connections” below.

Making Input Power Connections

Refer to Figure 2. Proceed as follows.

1. Remove the protective cover from the terminal block by squeezing the prongs and lifting the protective cover.
2. **1771-P3 and -P4** – Connect the L1 (high) line to the top (L1) connection on the terminal block.
1771-P5, -P5E – Connect the positive dc line to the top terminal (DC).
3. **1771-P3 and -P4** – Connect the neutral (low) line to the middle (N) connection on the terminal block.
1771-P5, -P5E – Connect the negative dc line to the middle terminal (COM).
4. **1771-P3 and -P4** – Connect the bottom terminal labeled GND to the ground bus (equipment ground).
1771-P5, -P5E – Connect the bottom terminal (labeled GND) to the ground bus.
5. Replace the protective cover on the terminal block.

Figure 2
Input Power Connections



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Paralleling Power Supplies

The power supply modules are designed to operate in parallel with:

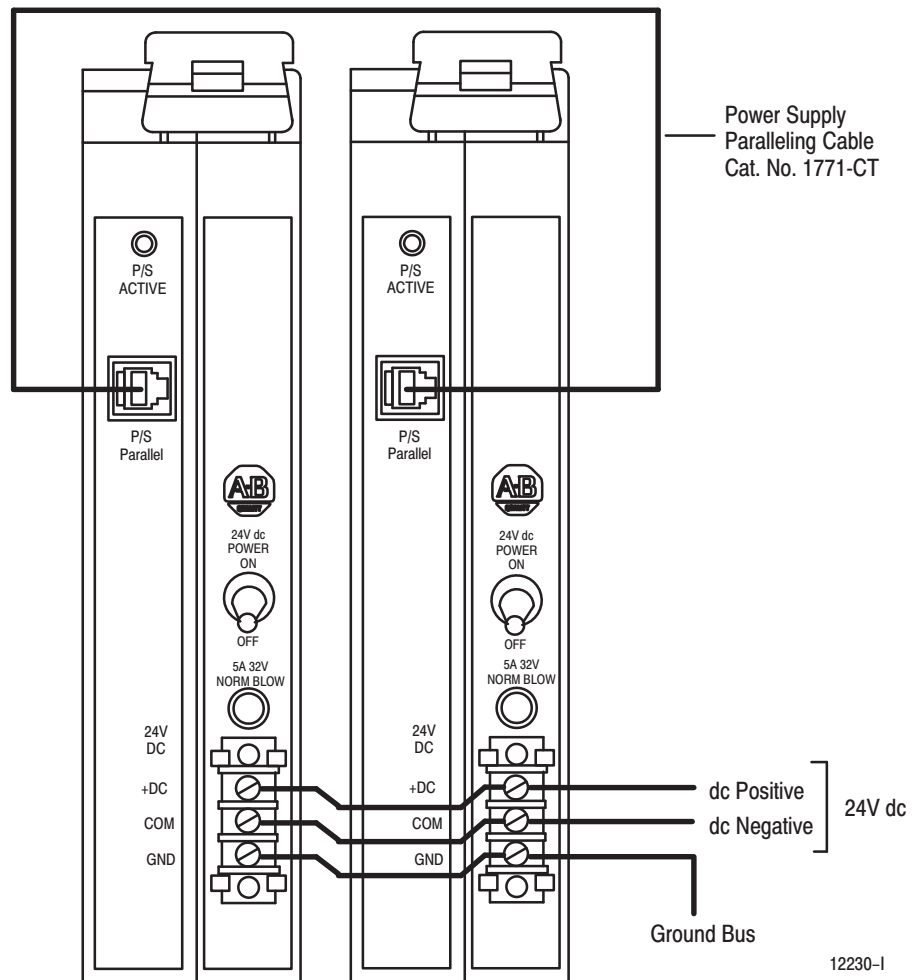
- another 1771-P3, -P4, -P5 or -P5E power supply (**Note:** The 1771-P5, -P5E power supplies are designed to operate in parallel **only** with another 1771-P5.)
- a 1772-LSP, -LWP or -LXP processor

Note: Paralleling two modules, even when using different power sources, does not provide redundancy.

To parallel two modules, proceed as follows:

1. Make certain that both power supply module power switches are off.
2. Connect the power supply paralleling cable (cat. no. 1771-CT) from the P/S Parallel port on the first power supply module to the P/S Parallel port on the second module. **Note:** Route the cable around the top of the I/O chassis to avoid induced voltages.

Figure 3
Paralleling Two Power Supply Modules



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Installation Instructions

Power Supply Modules

Cat. No. 1771-P3, -P4, -P5 and -P5E

Specifications

	1771-P3	1771-P4	1771-P5	1771-P5E
Module Location	1 slot in a 1771 I/O chassis	2 adjacent slots in a 1771 I/O chassis		
Nominal Input Voltage	120V ac		24V dc	
Input Voltage Range	97 to 132V ac rms		20.5 to 30V dc ¹	
Input Power	23 Watts	57 Watts	57 Watts	
Frequency Range	50/60Hz		Not applicable	
Isolation Voltage	2160V dc for 1s, 1500V rms for 1s (input line to chassis ground)			
Output Voltage	5.06V dc ($\pm 3.8\%$)			
Output Current	3A @ 5V dc maximum	8A @ 5V dc maximum		
Fuse	1A 125V slow blow Bussman MDL1.0 Littelfuse 313001	1.5A 125V slow blow Bussman MDX1.5 Littelfuse 31301.5	5A 32V normal blow Bussman MTH5 Littelfuse 312005	
Power Loss Time Delay – Input Power Loss to Processor Disable	13.6ms (± 3.6 ms)			Adjustable 13.6ms (± 3.6 ms) or 60ms
Agency Approval	UL, CSA	UL, CSA/H		UL, CSA/H, EMI/RFI Standard Conformance ²
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity	0 to 60°C (32 to 140°F) –40 to 85°C (–40 to 185°F) 5 to 95% without condensation			
Weight	1.6 lbs (0.73 kg)	2.3 lbs (1.04 kg)	2.6 lbs (1.18 kg)	
Paralleling Cable	Cat. No. 1771-CT			
Keying – right hand slot	Between 12 and 14 Between 18 and 20	Between 12 and 14 Between 20 and 22	Between 12 and 14 Between 22 and 24	
External Transformer (if used)	60VA	150VA	Not applicable	

¹ Input voltage range includes ripple. Full wave rectified and filtered dc is acceptable if peak to peak ripple is less than 10% of the input voltage.

² Conforms to CISPR 11 Class A Radiated Emissions, CISPR 11 Class A Conducted Emissions, 10V/M Radiated Immunity



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